BULLETIN

HOLMES SAFETY ASSOCIATION

E PLURIBUS UNUM

SAFETY EFFICIENCY

MINERAL INDUSTRIES

HOLMES SAFETY ASSOCIATION MR. JACK SAFETY

August 1990

HOLMES SAFETY ASSOCIATION OPEN-PIT PETE

August 1990

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KEEP US IN CIRCULATION

The Holmes Safety Bulletin contains safety articles on a variety of subjects: fatal accident abstracts, studies, posters and other safety-related topics. This information is provided free of charge and is designed to assist in presentations to groups of mine and plant workers during on-the-job safety meetings.

To report monthly chapter meetings, please use the postage-paid report form located in the back of this Bulletin and return to the Holmes Safety Association.

Welcome New Members

NAME	CHAPTER NO.	LOCATION
Cecil Construction Inc.	8852	Russell Prater, VA
Dominion Coal Corp. Dominion #18	8853	Grundy, VA
Barton Mining, Inc.	8854	Haysi, VA
Eagle Carbon No. 1 Mine	8855	Carbondale, WV
Rochester & Pittsburgh Coal Co. No. 6 Extension	8856	Jacksonville, PA
Lambert Coal Co., Inc. #48 Mine	8857	Nora, VA
Sanders Trucking	8858	Phelps, KY
A A & W Coals Elmon #5 Mine	8859	Phelps, KY
Wellmore Coal Corp.	8860	Phelps, KY
Dept. of Industrial Relations DOSH Mining Tunneling	8861	San Francisco, CA
Cardi Corporation	8862	Warwick, RI
Jentina Coal	8863	Rockhold, KY
Bevins Energy Corp.	8864	Meta, KY
Ring Coal Sales Inc.	8865	Neon, KY
East Star Mining Inc.	8866	Swords Creek, VA
Harold Keene Coal	8867	Gardner, VA
S & C Mining Inc.	8868	Bee, VA
Shaffers Diesel Service	8869	Smithfield, PA

NAME	CHAPTER NO.	LOCATION
Pioneer Sand & Gravel	8870	Kearns, UT
Appalachian Construction, Inc.	8871	Logan, WV
Holly Mining Company	8872	Pax, WV
Long Branch Energy	8873	Dorothy, WV
3 J Trucking	8874	Newburg, WV
Coal Strip Inc. No. 1 Surface	8875	Cannelton, WV
Baroid Drilling Fluids, Inc.	8876	Colony, WY
Pilot Butte Mine	8877	Reliance, WY
North Fork Mining Corp. Mine No. 1	8878	Pound, VA
L & M tool Co., Inc.	8879	Clarksburg, WV
L H & J Coal Company, Inc.	8880	Fort Martin, WV
Wasp Energy, Inc.	8881	Phelps, KY
Kuhn Trucking	8882	Madison, WV
Chesapeake Services	8883	Madison, WV
J R Trucking	8884	Clarksburg, WV
Blue Pennant Prep Plant, Kesscoals, Inc.	8885	Whitesburg, WV
Loudin Drilling, Inc.	8886	Saratoga, WY
Vista Mining Company	8887	Brookville, PA
Middle Creek Energy, Inc.	8888	Cedar Bluff, VA
Arkwright Prep Plant	8889	Granville, WV
Humphrey Prep Plant	8890	Morgantown, WV

Holmes Safety Association Monthly Safety Topic

Fatal drowning accident

GENERAL INFORMATION: A 69 year-old dredge operator with 40 years of total mining experience drowned when he fell from the tail boat of a portable dredge into a dredge pond.

DESCRIPTION OF ACCIDENT: The victim reported to work at his regular starting time. His regular duties as a dredge operator were to operate the dredge and maintain and repair the equipment on the dredge and tail boat. The tail boat consisted of pontoons measuring approximately twenty feet long and four feet wide. The pontoons were connected together with a steel channel and a hoisting rack assembly. The pontoons were positioned three feet apart and the suction pipe was raised and lowered through this three foot space between the pontoons.

Work continued as normal until 12:00 p.m., when the pumping operation was shut down for the scheduled one hour lunch period. At 1:00 p.m., the victim told several coworkers that he would pump for a short period of time and then shut down. After shutting down, the coworkers were to assist him in adding a piece of suction pipe to the dredge.

At approximately 2:00 p.m., the victim shut the dredge down. At this time, both coworkers saw the victim come out of the control cab and start walking toward the tail boat. The victim was required to travel to the tail boat several times each day to clean roots and debris from the suction pipe inlet. Access to the tail boat was by a single plank laid from the dredge to the tail boat pontoon.

One of the coworkers finished loading out a truck. He then walked to the tipple to clean the grizzly. While he was working on the grizzly, he noticed that the victim was not on the dredge or the tail boat. After a quick check of the dredges operator's booth, he realized the victim may have fallen into the water.

He immediately called the mine office on the front-end loader's radio unit and notified them of a possible drowning accident.

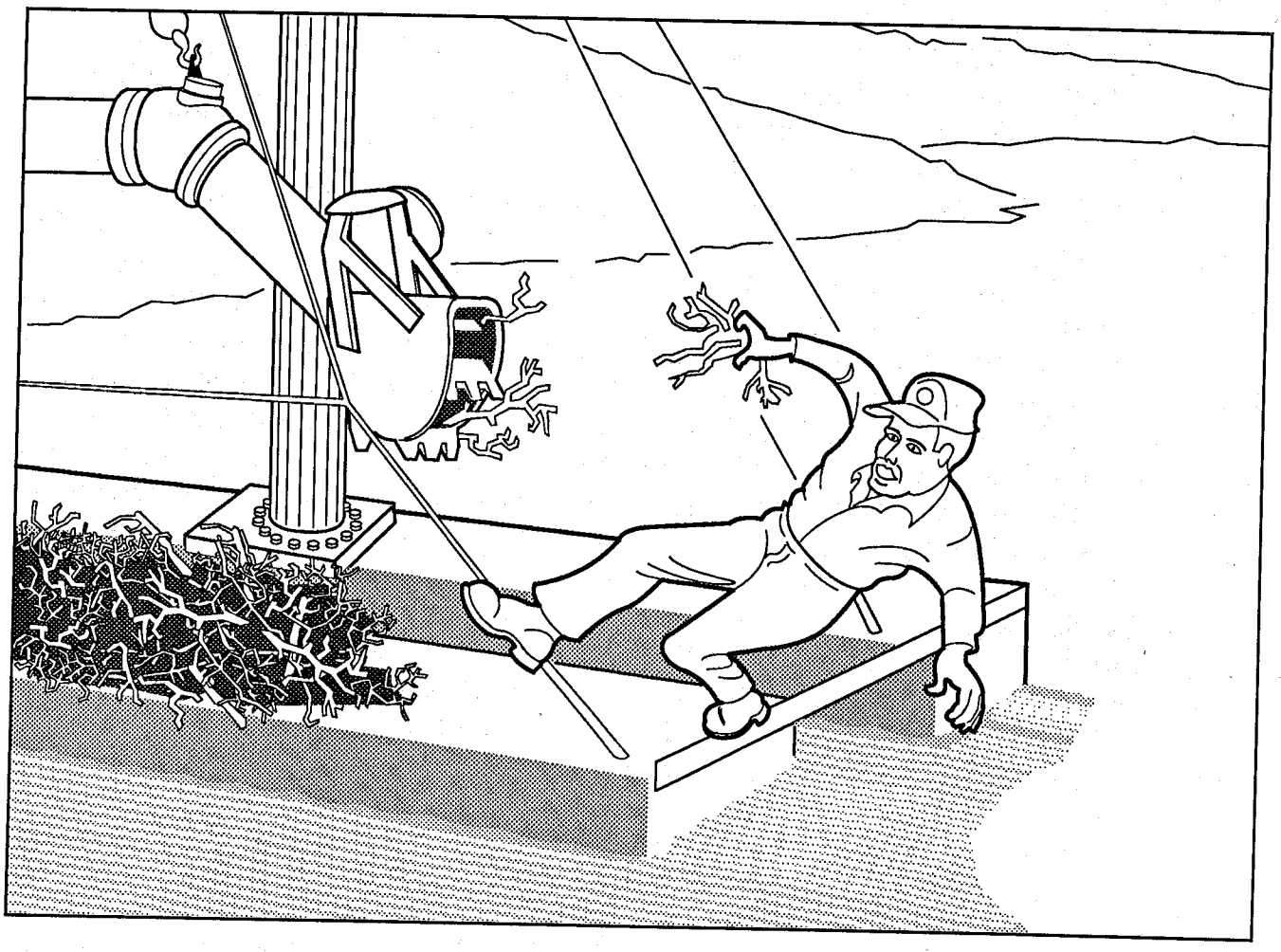
The local fire rescue unit was notified and a diving unit arrived at the dredge site within ten minutes of receiving the telephone call.

Rescue divers located the body at 3:51 p.m. The body was found thirty feet from the tail boat in approximately twenty feet of water. Cardio-pulmonary resuscitation was started on the victim immediately after he was removed from the water. The victim was then transported to the local hospital where he was pronounced dead at 4:52 p.m.

CAUSE OF THE ACCIDENT: The victim apparently slipped or tripped while

he was removing tree roots and other debris from the grating and fell into the water.

Contributing to the accident was the failure of management to establish and enforce safe work practices and procedures. The wearing of a life jacket is required where there is danger from falling into water. Failure of the victim to wear a life jacket greatly contributed to the severity of the accident.



Holmes Safety Association Monthly Safety Topic

Fatal falling material accident

GENERAL INFORMATION: A 58 year-old loader operator was killed when a coal storage pile, located at the entrance to a draw-off tunnel, collapsed and buried the victim. The victim's job classification was "loader operator" and he had 23 years of mining experience at this job classification. The victim had 1 year of experience performing this particular task and had been tasked trained in this task.

DESCRIPTION OF ACCIDENT: At approximately 6:00 a.m., the victim, a loader operator, began his normally assigned duties of keeping the feeders at a draw-off tunnel feeding properly.

Due to the overnight below freezing temperatures, the fine coal storage pile developed a frozen crust. This resulted in a blockage of the 2' x 2' No. 1 feeder. This required the victim to leave the backhoe loader and to use a steel bar to break up the frozen material. This was a normal part of the victim's duties.

Evidence indicated that the storage pile was approximately forty feet high and positioned immediately above the No. 1 feeder. The pile had been undercut from loading which resulted in the material residing at an angle of slope greater than the natural angle of repose. Unusual weather conditions had persisted during the month of January causing subfreezing over night temperatures and above normal daytime temperatures. this resulted in continuous freeze/thaw cycles of exposed materials.

The victim, while working at the No. 1 feeder, had evidently positioned himself in close proximity to the storage pile. the pile collapsed, burying the victim. There were no eyewitnesses to the accident.

The plant foreman arrived at the feeder area looking for the loader operator at approximately 1:45 pm. Unable to locate the loader operator, the foreman contacted another miner at the cogeneration plant and questioned him as to the loader operator's whereabouts. The foreman returned to the feeder area and after a thorough search of the area, concluded that the loader operator had been buried in a fall of material. The foreman summoned assistance and recovery operations were started. It took approximately one hour to extricate the victim, who was pronounced dead at the accident scene at 2:55 pm by the county coroner.

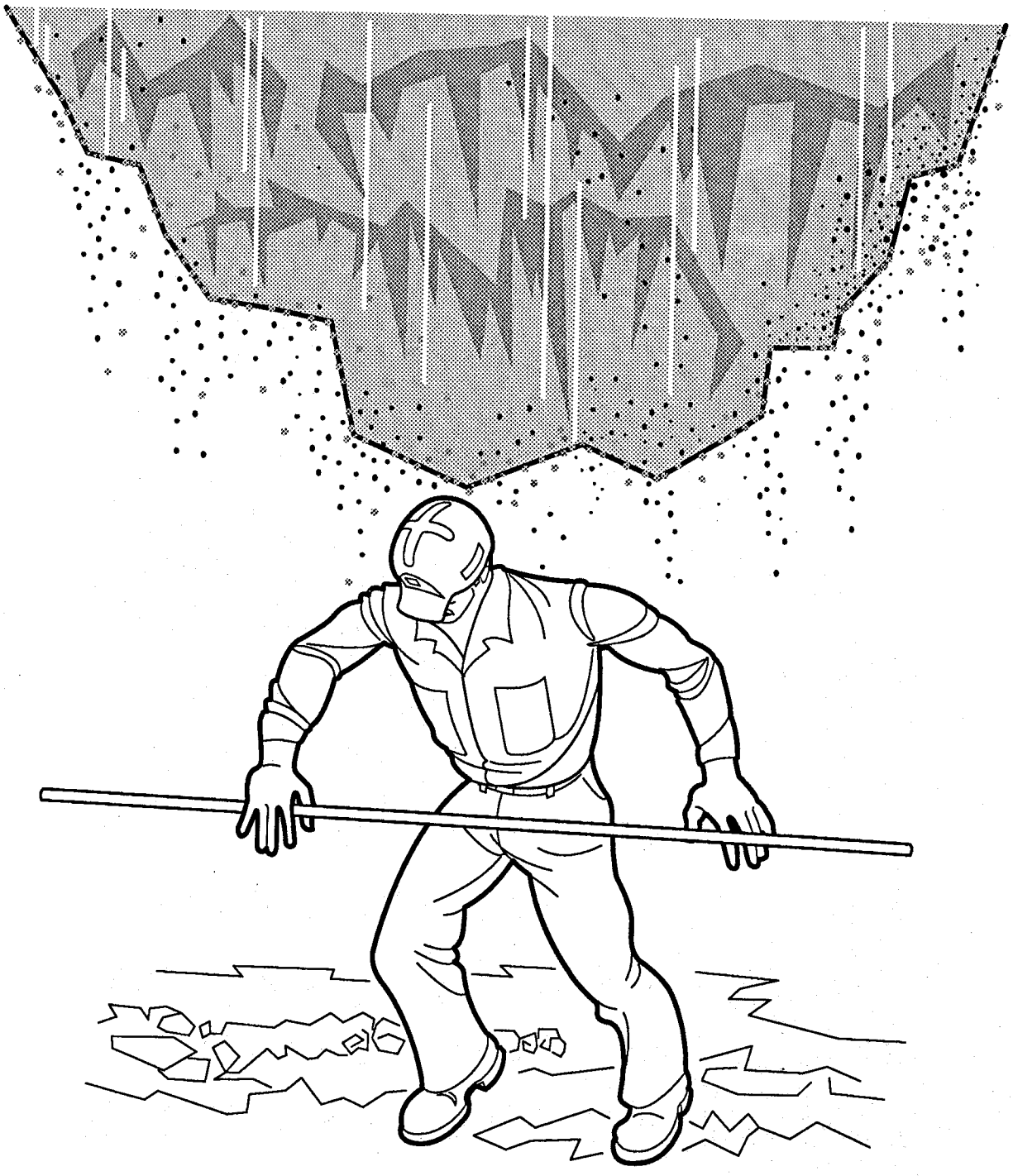
CONCLUSION: The accident occurred because the loader operator apparently positioned himself between the No. 1 feeder and the steep slope of a fine coal storage pile which collapsed and covered him.

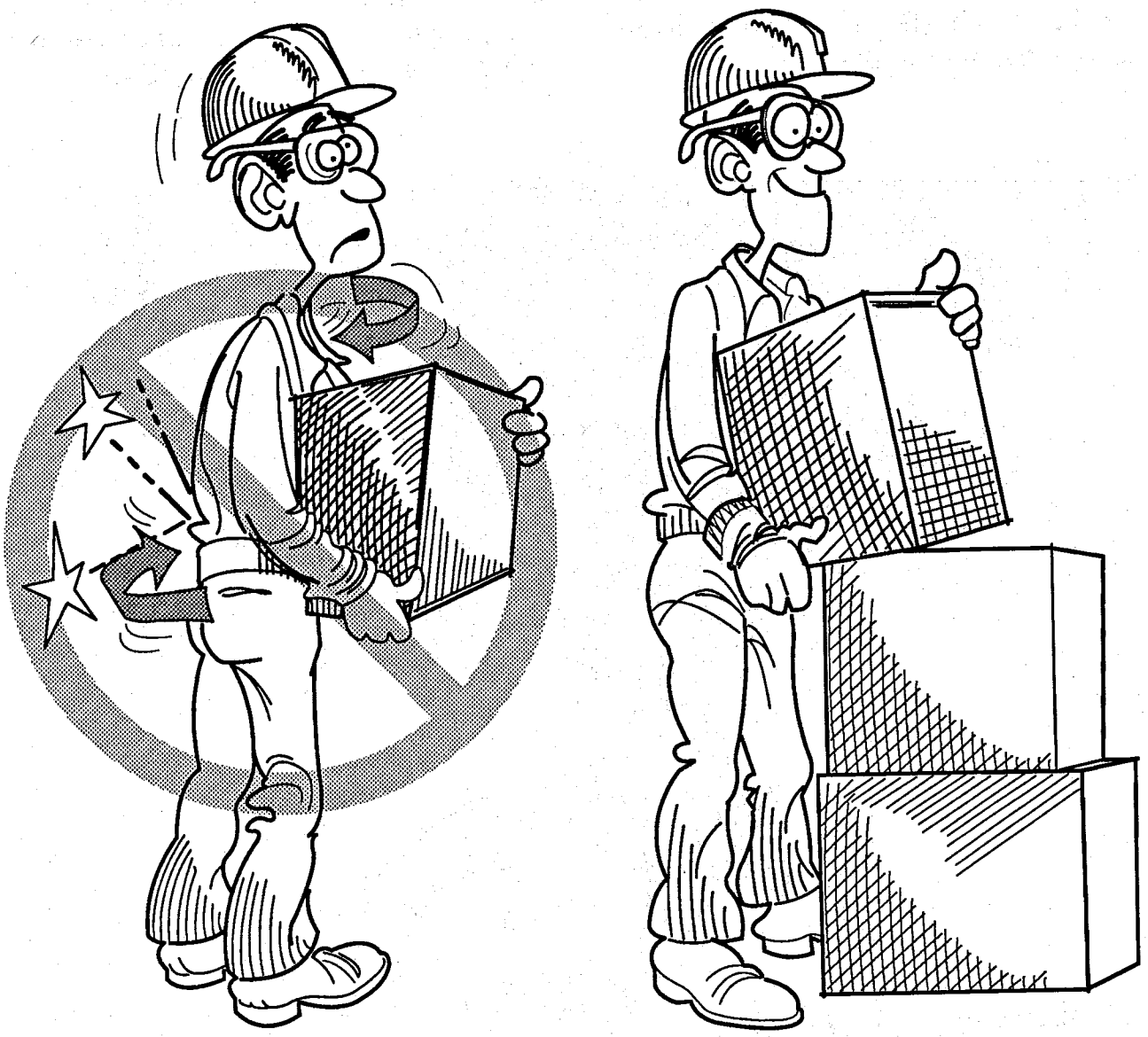
Contributing factors were:

- ❑ The fine coal storage pile immediately adjacent to the feeders had been undercut causing steep slopes.
- ❑ The storage pile was partially frozen
- ❑ Both management and the victim failed to recognize the hazards involved while performing work near partially frozen and undercut slopes of storage piles

❑ Management failed to provide annual refresher training to the victim which may have contributed to the accident

❑ Management failed to have a certified person examine all active work areas and facilities for hazardous conditions





Don't TWIST when you lift and carry.

Avoid twisting or excessive bending when you set down your load!

There is a high cost for low back injuries

USE PROPER LIFTING TECHNIQUES

Courtesy of Mines Accident Prevention Association Ontario

Report from the Indiana District Council Holmes Safety Association[1]

The meeting was held at the Omni Civic and Convention Center, 1615 Old Route 119 South, Indiana, Pennsylvania, Friday, June 15, 1990.

Program: Mr. Peter Neilan, Sales Manager for Conspec, made a presentation on "CO Mine Monitoring."

Prior to the official start of the meeting, the following chapter meeting information was read.

Chapter	Last Meeting	Year to Date	Chapter Meetings Face Meetings	Present
Emilie	2	8	256	1,419
Emilie #4	0	5	No Report	
Florence #2	22	85	160	1,177
Helen	0	0	No Report	
Jane	1	7	112	875
			2 Accident Awareness Meetings	
			56 Face Meetings	425 Present
Lucerne #6	5	29	47	398
Lucerne #8	1	10	54	368
Lucerne #9	6	42	194	586
Margaret #11	2	10	No Report	
Tunnelton	7	40	171	1,197
Urling #1	5	44	131	1,107
Urling #3	0	0	No Report	
Iselin Prep.	2	4	12 Group Meetings	315 Present
Kent	0	0	No Report	
Heshbon	7	32	60	501
General	4	24		
MSHA	2	13		
State DER	0	2		
Visitors	6	30		
Total	72	385		

Invocation was given by Mr. Jim Mort, Safety Inspector, Tunnelton Mining Company and he also led the Council in the Pledge of Allegiance.

President Flack called the meeting to order at 7:05 P.M.

The reading of the minutes of the previous meeting of the Indiana District Council, Holmes Safety Association was waived and approved as distributed.

The number of members present were noted by roll call and a member of each chapter gave a report on the activities of their chapter for the month of April, 1990.

Mr. Robert Nelson, Supervisor of Inspectors, MSHA, Indiana, Pennsylvania, gave the current fatality report. He stated that as of May 3, 1990, there have been 29 fatals in the mining industry. This compares to 17 fatals for the same period last year.

The plaques for the month of April were awarded to:

Group I	Florence #2
Group II	Lucerne #6
Group III	Heshbon
Group IV	Florence Prep.

Secretary-Treasurer, Rick Radakovich, announced that the Indiana District Council was honored with many awards at the National Holmes Safety Association meeting in Phoenix, Arizona, on May 9 and 10, 1990. He said that surface chapters were awarded a plaque for attaining the lowest accident frequency rate (3.76) in the National Group III - "Coal Surface" category for 1989. This was the first time that the Indiana Council won the national award. Mr. Radakovich congratulated all the members for their outstanding safety record. He went on to say that certain members of our Council received awards. Mr. Robert Vargo (retired—National Mine Service Company) received a Merit Award for his outstanding and distinguished service to the Holmes Safety Association. Mr. Robert Nelson (Supervisor of Inspectors, MSHA), Mr. Harry Thompson (retired—Supervisor of Inspectors, MSHA), and Mr. Dave Hazlett (retired—Insurance Representative for Old Republic Insurance Company) each received a Service Award for over 30 years of service to the Holmes Safety Association. Mr. Vargo, Mr. Nelson, Mr. Thompson, and Mr. Hazlett were present at our Council meeting and each was recognized for their outstanding work for the Holmes Safety Association. Mr. Radakovich also announced that Dr. Charles J. Potter (retired —Chairman of the Board, Rochester & Pittsburgh Coal Company) and Mr. Edward J. Onuscheck (retired—Vice President - Safety and Training, Rochester & Pittsburgh Coal Company and currently a consultant for the Rochester & Pittsburgh Coal Company) each received a service award from the Holmes Safety Association for over 30 years of service to the Association.

Mr. Robert Nelson introduced the speaker for the evening, Mrs. Sandy Gradwell, Coordinator for the Regional Highway Safety Project, Indiana University of Pennsylvania. She discussed the new vehicle driving campaign in Pennsylvania called "Drive Smart." She described various driving characteristics and identified nuisance characteristics that are causing accidents and fatals on our highways. the objective of this campaign is to produce safer and more efficient drivers who are able to respond to critical situations. She emphasized that perception driving (our judgment) is of great importance in reducing accidents and fatals on our highways. Mrs. Gradwell stated that all drivers must be aware of what is going on and be prepared to react. While driving, we must be constantly aware of everything around us. The Council viewed a video tape titled "The Final Factor." This video tape described the factors that lead up to an accident. She stated that by eliminating one factor, you can eliminate an accident.

Our thanks to Mrs. Sandy Gradwell for a very interesting and informative program.

There being no further business, the meeting was adjourned at 8:20 P.M.

Safety competition—Indiana Council year to May 1990

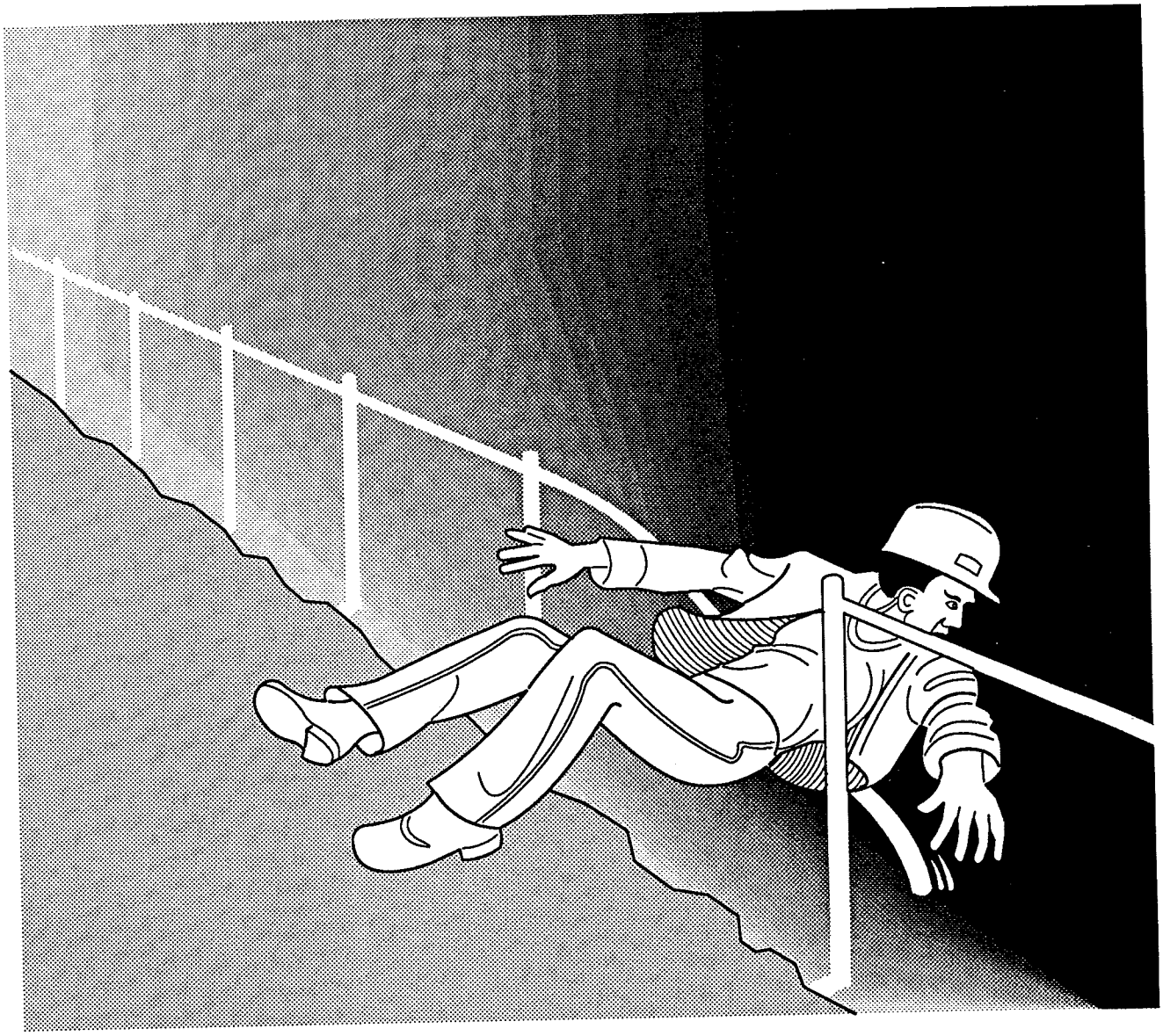
Chapter	Lost-time accidents	Fatals	Man-hours exposure	Frequency rates	Tonnage	Tons per accident	Standing
Florence #2	5	0	209,374	4.73	290,142	58,028	lst
Jane	15	0	223,102	13.45	390,790	26,053	4th
Tunnelton	12	0	201,252	11.93	395,848	32,987	2nd
Urling #1	13	0	208,694	12.46	459,030	35,310	3rd
Emilie	14	0	207,956	13.46	299,093	21,364	5th
Helen	36	0	248,121	29.02	450,327	12,509	6th
Total	**95**	**0**	**1,298,499**	**14.63**	**2,285,230**	**24,055**	
Lucerne #9	2	0	132,327	3.02	326,600	163,300	lst
Lucerne #6	4	0	95,906	8.34	177,654	44,414	2nd
Lucerne #8	6	0	121,482	9.88	292,721	48,787	3rd
Total	**12**	**0**	**349,725**	**6.86**	**796,975**	**66,415**	
Margaret #11	3	0	72,566	8.27	194,381	64,794	3rd
Heshbon	1	0	71,200	2.81	155,726	155,726	lst
Urling #3	4	0	76,328	10.48	165,377	41,344	4th
Emilie #4	4	0	100,517	7.96	192,182	48,046	2nd
Total	**12**	**0**	**320,611**	**7.49**	**707,666**	**58,972**	
Kent	1	0	51,840	3.86	141,352	141,352	3rd
Florence Prep	2	0	32,002	12.50	—	—	5th
Dilltown Facility	0	0	14,694	0.00	—	—	lst
Florence Shop and Construction Crew	0	0	11,153	0.00	—	—	2nd
Iselin Prep.	3	0	95,949	6.25	—	—	4th
Total	**6**	**0**	**205,638**	**5.84**	**141,352**	**23,559**	
Grand Total	**125**	**0**	**2,174,473**	**11.50**	**3,931,223**	**31,450**	

Indiana District

Comparison of Fatality Rates

1989	1990
0.04	0.00

[1] *Submitted by Rick Radakovich, Secretary-Treasurer, HSA Indiana District Council*



Dangers await those who wander onto abandoned mine sites

Late last year, a 21-year-old California man was climbing a fence that was installed to keep trespassers away from an abandoned mine site. As he did so, the fence gave way and the man tumbled 400 feet to his death down the adjacent mine shaft.

Each year, according to the Labor Department's Mine Safety and Health Administration (MSHA), abandoned mines, sand pits and quarries claim the lives of adults, teenagers and children. They have been the sites of drownings, suffocations and head, neck and back injuries.

"Most victims of these tragedies are trespassers, explorers or curious youngsters who usually go to these abandoned mine sites in spring and summer months," said Assistant Secretary of Labor for Mine Safety and Health William J. Tattersall. "The public must be warned that all aban-

doned mines are potential killers and should be avoided.

"Many potential dangers await persons who venture onto idle surface or underground mining properties," said Tattersall. These include hazards such as slippery slopes, icy waters and unknown water structures at quarries, oxygen-deficient air, explosive gases, and poor roof conditions in abandoned underground mines.

A 14-year-old Missouri boy broke his back and ankle after falling 35 feet into an abandoned sand mine. The boy and his cousin had crawled under a fence in order to "play" near the mine.

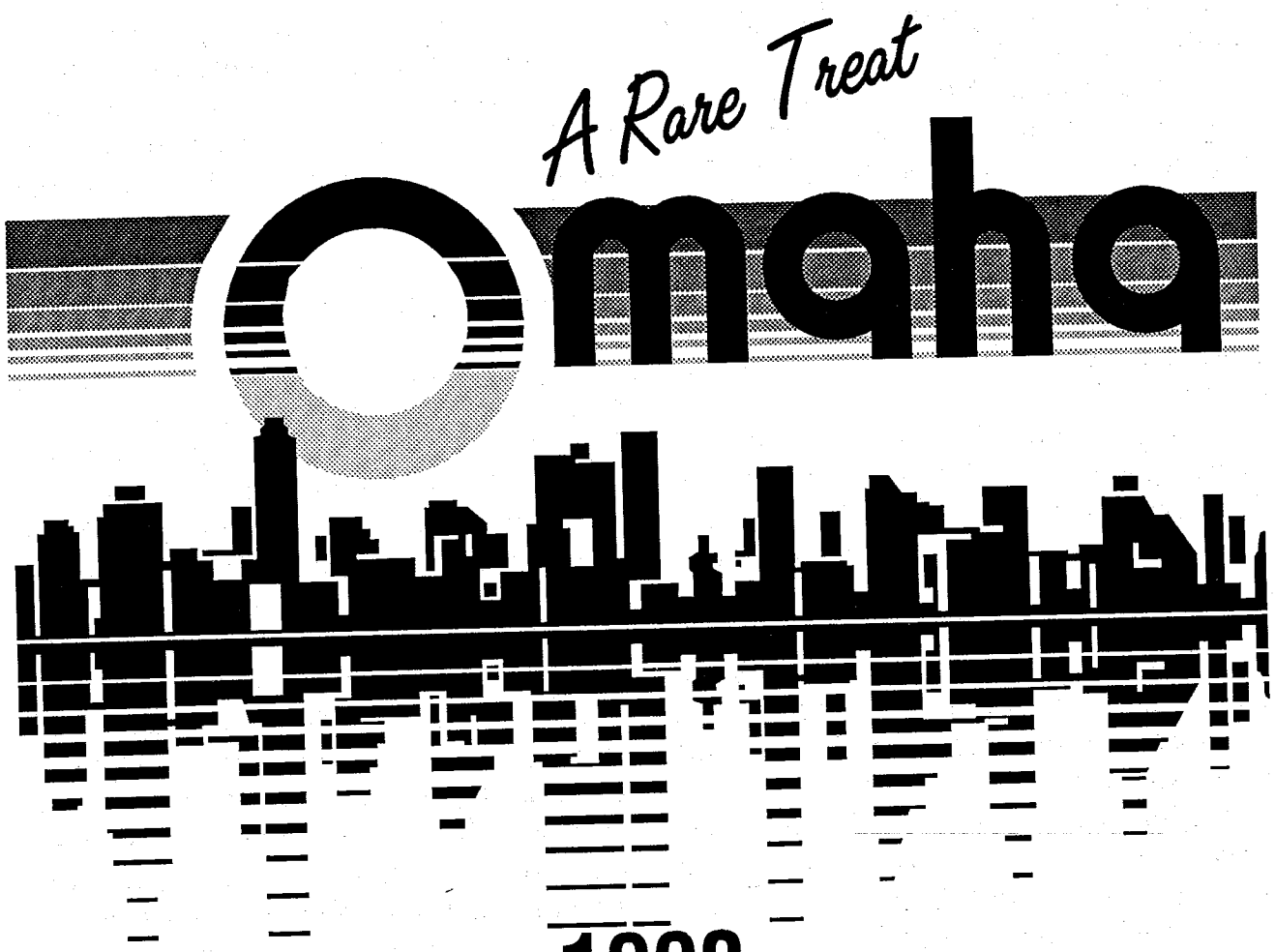
Three Colorado teenagers "exploring" an abandoned coal mine last summer were overcome by poisonous gas and died in the mine. A fourth teenager was rescued but hospitalized.

A 15-year-old Connecticut youth died of massive head and internal injuries late last year after falling 100 feet into an abandoned rock quarry. The boy and two other friends crawled through holes in a fence in order to get to the quarry.

Over the years, MSHA has alerted mine operators and the public about the potential "death traps" that await unwary trespassers on mine properties and has worked closely with local mining communities to have abandoned mine openings sealed and fenced off from the public.

The agency also conducts intermittent safety awareness campaigns on this subject among state and local governments, the public and the mining industry.

As part of one such effort, MSHA's Coal Mine Safety and Health office in Wilkes-Barre, Pa., recently sponsored a poster contest among area school children. The posters were to warn others of the hazards of abandoned mines. A U.S. Savings Bond was awarded to students producing the best poster in three age groups. The MSHA office also made informational literature and slide programs available to the public to increase awareness of abandoned mine hazards.



1990 Rocky Mountain Mine Safety and Health Training Conference

Holiday Inn
72nd Street/I-80
Omaha, Nebraska

October 16-18, 1990

Details in next month's issue of the HSA Bulletin

ANNOUNCEMENT!

MSHA introduces new products to fight substance abuse in mining

To combat the use of alcohol and drugs at the mining workplace, the Mine Safety and Health Administration (MSHA) announced today the availability of two new drug awareness-building products.

MSHA produced a 38-minute documentary type videotape and a comprehensive research study on the effects of alcohol and drug abuse among mining employees. The new products were produced in cooperation with the Mining Industry Committee on Substance Abuse, a committee of management, labor and government representatives formed to work on alcohol and drug problems.

"Secretary of Labor Elizabeth Dole and I are committed to a drug-free workplace," said Assistant Secretary of Labor for Mine Safety and Health William J. Tattersall. "Like other American industries, the mining industry has its share of problems with alcohol and drug use on the job. With the many hazards related to mining, MSHA cannot tolerate this threat to the safety and health of mining employees.

"These new products will help our industry learn more about action programs to combat this problem. Thousands of a previously produced videotape and a resource manual already have been distributed by MSHA to companies, unions and others concerned about substance abuse on the job. Research has indicated the industry wants more tools to fight this threat to the safety of mining employees, and MSHA is producing them."

The new videotape, entitled "What Am I Worth", depicts actual mining cases in which mining employees share their experiences in using alcohol and drugs at the mine site. The video shows what companies and unions are doing through employee assistance programs to eliminate substance abuse at the mining workplace and rehabilitate affected workers.

"The new videotape effectively presents the problem and offers the right solution," Tattersall said. "I strongly endorse the use of employee assistance programs in the mining industry. These programs link companies and unions to the trained professional resources needed to deal effectively with workers who have problems involving alcohol, drugs or family matters."

The research study, based on a selected sample of mines in each coal and noncoal mining category, provides the mining community with insights on substance abuse related company programs. The study, called "A Survey of Substance Abuse Programs in the Mining Industry", was based on responses to questionnaires received from nearly 1,300 companies. It supplies qualitative data on substance abuse activities such as employee assistance programs, drug testing and training.

MSHA and the mining committee have previously produced a videotape entitled "Substance Abuse. Is It Our Problem?" and the "Mining Industry Resource Manual on Alcohol and Drug Abuse." Substance abuse products can be obtained at modest prices through the Business Office, National Mine Health and Safety Academy, P.O. Box 1166, Beckley, WV, 25802-1166. Phone (304) 256-3206. Please allow ten weeks delivery time.

Safety Alert!

A Mine Safety Alert from the Virginia Department of Mines, Minerals and Energy/Division of Mines

Unexpected Movement of Roof Drills:

There have been a number of accidents involving roof drills which have seriously injured drill operators. In Virginia one such accident resulted in a fatality. Injuries have resulted from drill operators being caught between the mine roof and drill boom or ATRS of the roof drill. The injuries have occurred during roof bolt installation, while retrieving drill steel from bolt holes, while removing the dust hose from across the drill boom, and while reaching across the drill boom to retrieve dropped steel.

Safety Precautions:

- Roof drill operators should familiarize themselves with all pinch point hazards presented by their machines
- Roof drill operators should not place themselves in hazardous locations
- Roof drills should be maintained in safe operating condition
- The machine should be in the "off" position when it is necessary for the operator to lean or reach over the drill boom

Unexpected Movement of Longwall Shields:

Several accidents have occurred involving longwall shields which collapsed, resulting in fatal crushing injuries. In every case, the shields were in the down pressure mode when they suddenly released from their lodged position. One of these fatal accidents occurred in Virginia when the victim was caught between the stabilizer bar and the shield.

Safety Precautions:

- Prior to performing work on lodged shields, determine what steps must be taken to safely dislodge the shield and perform the task from a safe position
- Longwall shield operators should leave the controls for a shield in the neutral position before proceeding to the controls of an adjacent shield
- Longwall shield operators should avoid placing themselves in pinch points and other hazardous positions

Job Safety Analysis and On-The-Job Training Materials

In an effort to further reduce the number of accidents and injuries in the mining industry, the Mine Safety and Health Administration is promoting the use of Job Safety Analysis. Assistant Secretary William Tattersall announced "I am now initiating a major campaign to put Job Safety Analysis to work in every mining operation in the United States." This JSA initiative will be a major thrust to the commitment of "zero fatalities by the year 2000." The Mine Safety and Health Administration encourages the mining industry to work toward the goal of zero fatalities.

Fatalities, accidents and injuries can be reduced if industry, labor, and government work together and share their safety knowledge. One way is to use Job Safety Analysis (JSA) which is proven to be an effective accident prevention method. JSA is based on the following ideas: A specific job or work assignment can be separated into a series of relatively simple steps; hazards associated with each step can be identified; and solutions can be developed to control each hazard. JSA's are more effective when workers and first line supervisors are actively involved in their development. The key to the success of this program lies in a total management commitment to see it followed through.

Job Safety Analysis ensures that workers are made aware of safe job procedures through training and job observation. Managers will find that training is greatly facilitated by having a JSA as a primary instructional tool.

Once a JSA is developed it should be kept updated as technology changes, or when better work procedures are found. This is accomplished by ensuring that channels of communication remain open on the job site.

If your mine is currently using the JSA process, please share with us your ideas on how it is working by contacting the Academy. We encourage you to continue your use of JSA, and hope the stories of your successes will help in seeing that JSA becomes a part of every mine's safety program.

The National Mine Health and Safety Academy can provide materials and assistance in setting up JSA programs at your mine. A special training package is being developed and will be available September, 1990. A separate flyer will be issued advertising these materials. This package will consist of a video tape and workbook that will show a supervisor or trainer how to develop a JSA. Until that time, there are over 100 on-the-job training modules covering many common mining occupations and tasks available from the Academy, as well as a safety manual and instruction sheet for using these materials in a JSA program.

On-The-Job Training and Job Safety Analysis materials are listed below. The first copy is free of charge. Prices vary for each additional copy and are listed with each item.

Safety Manual:

SM 5 Job Safety Analysis
31 pages. Each additional copy $1.00

On-The-Job Training Guides:

IG 40 Sand, Gravel, and Crushed Stone
19 modules Each additional copy $4.00

IG 41 Metal and Nonmetal Dredges
5 modules Each additional copy $1.00

IG 42 Cement
15 modules Each additional copy $3.00

IG 43 Surface Metal and Nonmetal
17 modules Each additional copy $2.00

IG 47 Underground Coal
13 modules Each additional copy $4.00

IG 48 Surface Coal
15 modules Each additional copy $4.00

IG 49 Anthracite and Bituminous Coal Preparation Plants
16 modules Each additional copy $3.00

IG 50 Underground Anthracite
7 modules Each additional copy $1.00

IG 51 Surface Anthracite
15 modules Each additional copy $2.00

Other OJT related materials may be appropriate for your particular operation. Refer to the current ***Catalog of Training Products for the Mining Industry - 1990.***

If you desire information or advice concerning these materials and how to use them, feel free to contact the following persons at the Academy:

Jimmy Shumate - (304) 256-3353 or 3228
John Forte - (304) 256-3321
Clyde Proffitt - (304) 256-3323

✂ ---------- Order form ----------

Please send the following On-The-Job Training and Job Safety Analysis materials:

Title	Number of Copies	Title	Number of Copies
SM 5 - Job Safety Analysis	_____	IG 47 - Underground Coal	_____
IG 40 - Sand, Gravel, and Crushed Stone	_____	IG 48 - Surface Coal	_____
IG 41 - Metal and Nonmetal Dredges	___	IG 49 - Anthracite and Bituminous Preparation Plants and Shops	_____
IG 42 - Cement	_____	IG 50 - Underground	_____
IG 43 - Surface Metal and Nonmetal	___	IG 51 - Surface Anthracite	_____

Name _____ Title _____

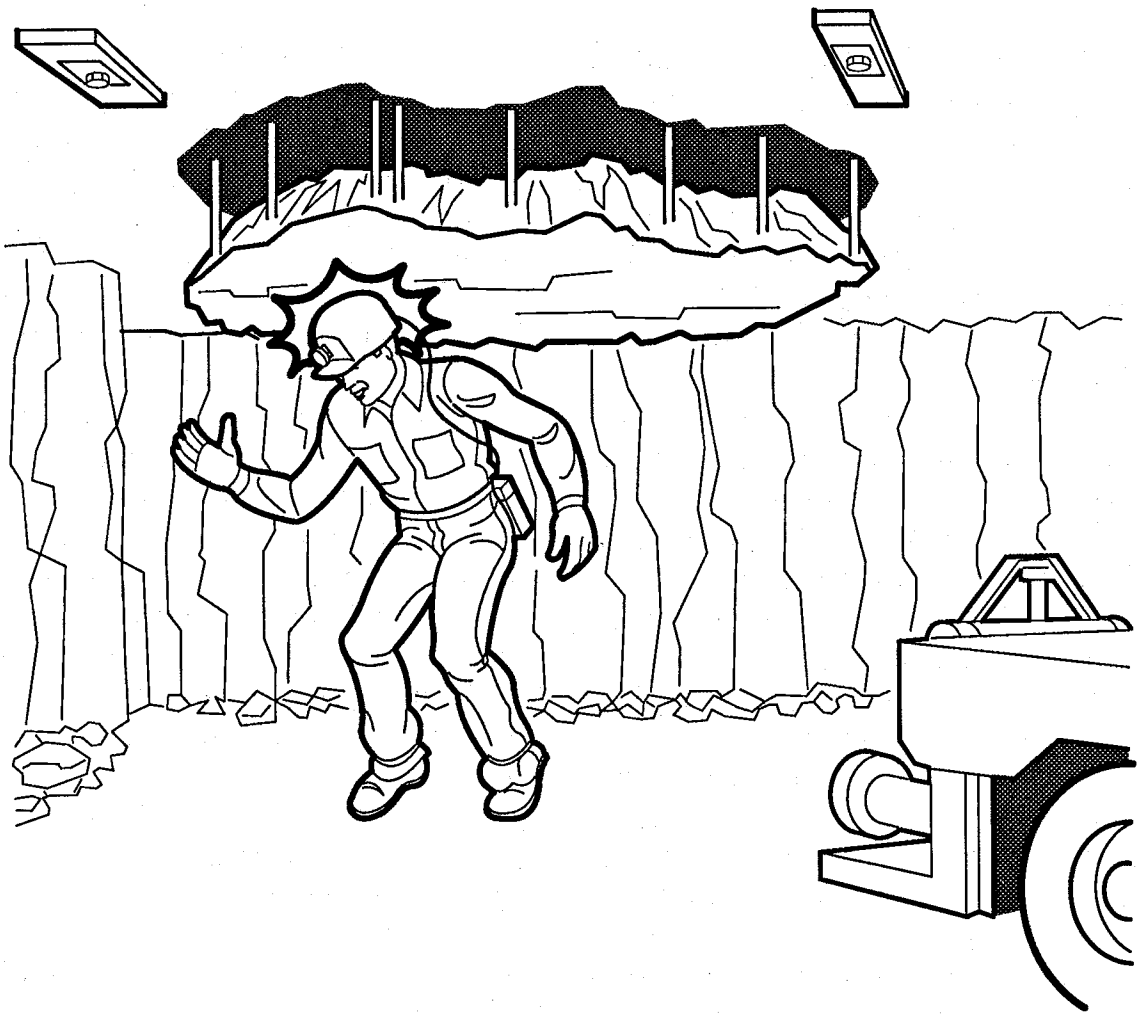
Company _____ Purchase Order Number _____

Address _____

City _____ State _____ Zip Code _____

Roof Evaluation—Accident Prevention

REAP—a program developed to promote health and safety awareness in mining



Don't be *Safety Lazy...*
Always use temporary supports
Before going inby the last row of bolts!

MINERS: Credit for this month's safety slogan goes to: Elmo Franklin Banks of Arch-of-Kentucky High Splint #1 mine, HC 67 Box 430, Cumberland, Kentucky 40823. Please send your suggestions to: MSHA, Educational Policy & Development, 4015 Wilson Blvd., Graphics Room 533A, Arlington, VA 22203-1984.
Phone: (703) 235-1400

August 1990

The importance of entry widths to roof controls

by Don Farley
National Mine Health and Safety Academy

As of July 9, 1990, 11 of the 23 fatalities occurring in underground coal mines were from roof falls; a number double that of haulage fatalities, the second leading killer in underground coal mines. This story repeats itself, year after year. One might think we are confronting conditions that are beyond our control or understanding. That, however, is not the case.

These roof falls happened because we failed to take appropriate precautions in recognizably adverse conditions and/or we performed work in a manner other than that prescribed in the approved roof control plan. There is strong evidence in the fatality reports that compliance with the approved roof control plan would have prevented these deaths.

The roof control plan is concerned with more than roof bolts and timbers. Widths of openings, depths of cuts, and sequence of mining are all critical to the ability of the roof control plan to provide the minimum measure of safety needed under normal, unchanging, and expected conditions.

Widths of openings are determined by the strength of the rock strata above the coal seam. Weak strata would require narrow widths while stronger strata would allow wider openings. The roof across an opening may be likened to a beam over a doorway in a house. If that doorway beam is in a load-bearing wall (a wall that supports the weight of upper floors or roof), then more reinforcement is needed to keep the roof of the house from sagging. A doorway beam in a non-load bearing wall (doors between room or to bathrooms, etc,..) will not require as much reinforcement because it only needs to be strong enough to hold the door and support the one wall. What happens if we don't provide the additional support or provide insufficient support? The doors stick, the wall cracks and upper floors sag along with the roof. An opening in a coal mine reacts the same way. The difference is that rock does not bend as easily as wood, so, it breaks and falls. Since the roof is composed of rock layers of various thicknesses, the stress created by the weight causes the weakest layers to separate. When this separation occurs, several layers of rock may suddenly break and fall. When openings are made in excess of the approved plan, more weight is placed on the beam of roof over the opening. This may be similar to cutting too large a hole in a load-bearing wall for the reinforcement provided. The wooden beam bends and cracks due to excessive load. The roof strata in the coal mine will react in the same way. Look at Diagram A. The

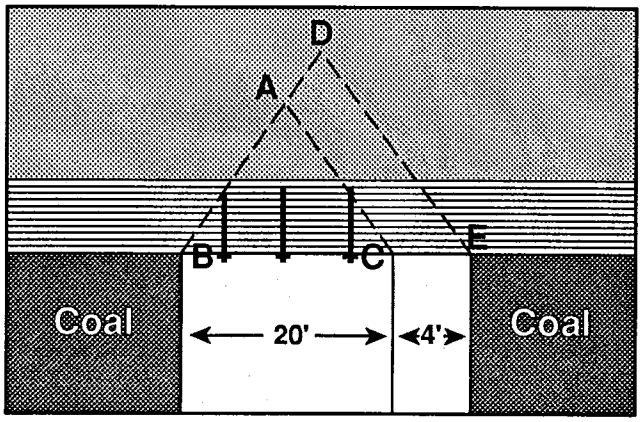


Diagram A

triangle enclosed by A, B and C represents the amount of roof strata required to be

supported for a 20 foot opening. This is the amount of roof strata that would normally fall if left without support. If the roof support is designed for that amount of weight and we increase that opening by 2 feet (triangle B, D and E) then, we have added about 33% more weight or pressure to the beam of roof strata bound together with the bolts. If that opening is increased by 4 feet, then the pressure is increased by 72%. A person might expect the weight increase to be only 10% since 2 feet is 10% of 20 feet. Calculated precisely, the 2 feet of increased area adds 33.1% more to the original affected roof area. This happens because the height of the affected roof is directly related to the width of the opening. Engineers calculate this height as twice the width of the opening. Hence, a 20 foot width would equal 44 feet of affected roof area. Reducing the width has the effect of lowering the amount of weight or pressure on the supported beam. 2 feet less than 20 feet would provide about 27% less weight. A 16 foot width would have 48% less weight to support than a 20 foot width. (See the chart for more widths compared to a 20 foot width).

Because roof control is a part of almost every miner's job, the safety of all underground workers depends on every individual in the mine. Because of his/her responsibility to know every miner's work, the supervisor must ensure that all aspects of the roof control plan are being followed.

The federal law provides that any opening which exceeds its approved width by 1 foot for a distance of more than 5 feet is a violation. That regulation exists for the reasons stated above. Good planning and attention to the job will help to keep the widths of all those entries and crosscuts within the allowable limits. If wider openings occur, be sure to properly reinforce the roof. Whether advancing or pillaring, opening widths must be maintained if the roof support established for the mine is to be effective. Be conscientious when turning crosscuts and maintain centers in all headings. Let's work together as a team for roof control - everyone doing their part. Let's stop roof fall fatalities from being the number one cause of death in underground coal mines. Do it for your families, yourself, your fellow miners, your company, the state and federal enforcement agencies and anyone else that might benefit from a safer coal mining industry.

REMEMBER compliance with the plan is only part of the key to eliminating roof fall accidents. That plan only applies to normal, unchanging and expected conditions. If those conditions become abnormal, changing or unexpected, stop mining activities, report it to the supervisor and evaluate the change and **never** go inby unsupported roof.

Weight/pressure changes compared to an entry of 20 feet

Entry Width	Pressure (PSI)	% Change
12	1728	– 78.4
14	2744	– 65.8
16	4096	– 48.8
18	5832	– 27.1
20	8000	0.00
22	10648	+ 33.1
24	13824	+ 72.8
26	17576	+ 119.7
28	21952	+ 174.4
30	27000	+ 237.5

Test your first aid knowledge by taking the quiz below.

Answers are on the next page.

True or false?

1. When examining a victim who is bleeding severely, you should first check for other conditions, then try to control the bleeding. ❑

2. If a neck injury is suspected, you should not perform mouth-to-mouth ventilation. ❑

3. The most common cause of airway obstruction in an unconscious victim is the tongue. ❑

4. A burn classified as "first degree" is the most serious type of burn because muscle tissue and bone may be damaged. ❑

5. When providing first aid for a chemical burn, you should first remove all clothing containing the chemical. ❑

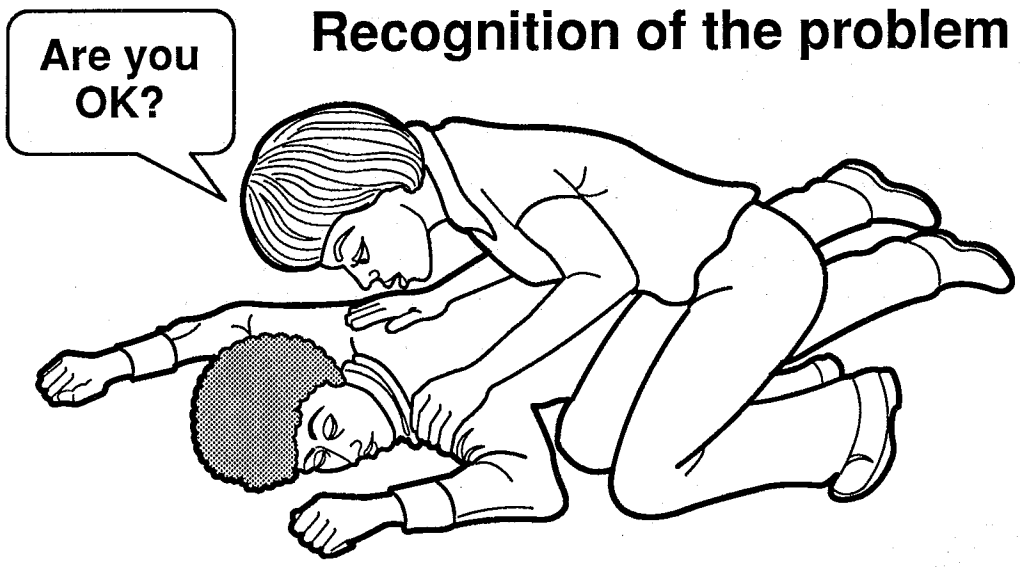
6. When a victim has sprained an ankle, and the person must continue to use the foot temporarily to reach a place for further treatment, you should not bother with treatment. ❑

7. When a piece of coal dust is in the eye, but not embedded, there is no need to provide first aid. ❑

8. If a conscious person exhibits signs of having an obstructed airway (choking, unable to speak, breathe, or cough), you should treat the person by forcing him or her to drink fluids. ❑

9. If a victim has a fractured elbow, you should first gently bend the person's arm and place in a sling and then pack ice around the affected area. ❑

10. When control of external bleeding is necessary, you should use a tourniquet only as a last resort. ❑



1. **False,** severe bleeding is a life-threatening injury and requires immediate attention.

2. **False,** if a neck injury is suspected you should perform mouth-to-mouth ventilation using a modified jaw thrust.

3. **True**

4. **False,** third degree burns are the most serious because the frequently involve muscle and/or bone damage, destruction of nerve endings in the skin and destruction of the affected skin area.

5. **True**

6. **False,** you should unlace the person's shoe but not remove it and create a brace for the ankle with a cravat bandage.

7. **False,** first, you should flush the eye with water for at least 15 minutes, holding the lids open if necessary. If the foreign body is lodged under the upper eyelid, it often can be removed by drawing the upper lid down over the lower lid (as the upper lid returns to its normal position, the under surfaces will be drawn over the lashes of the lower lid and the foreign body will be removed by the wiping action of the lower lashes. You may also remove a foreign body by grasping the eyelashes of the upper lid and turning the lid over a cotton swab. The particle may then be carefully removed from the eyelid with the corner of a piece of sterile gauze. Remember, never try to remove an object which is embedded in the eyeball. Seek medical help immediately.

8. **False,** first you should determine if the airway obstruction is partial or complete. If the obstruction is partial (the victim is getting some air) encourage the person to cough. If the victim is not getting any air, stand behind the victim and place your arms around the person's waist. Do not squeeze the person, grasp one fist in your other hand and position the thumb side of your fist against the middle of the victim's abdomen just above the navel and well below the rib cage. Press you fist into the victim's abdominal area with a quick, upward thrust. Repeat this procedure if necessary until the foreign object is expelled.

9. **False,** when a victim has fractured an elbow, you should never bend, straighten, or twist the arm in any direction. A splint

should be applied to keep the elbow stationary. If the arm is straight after the injury, apply a straight splint which will keep the arm from moving during transport. If the arm is bent, apply an L-shaped splint. Splinting should extend from the underarm to 1 inch beyond the end of the middle finger of the affected arm.

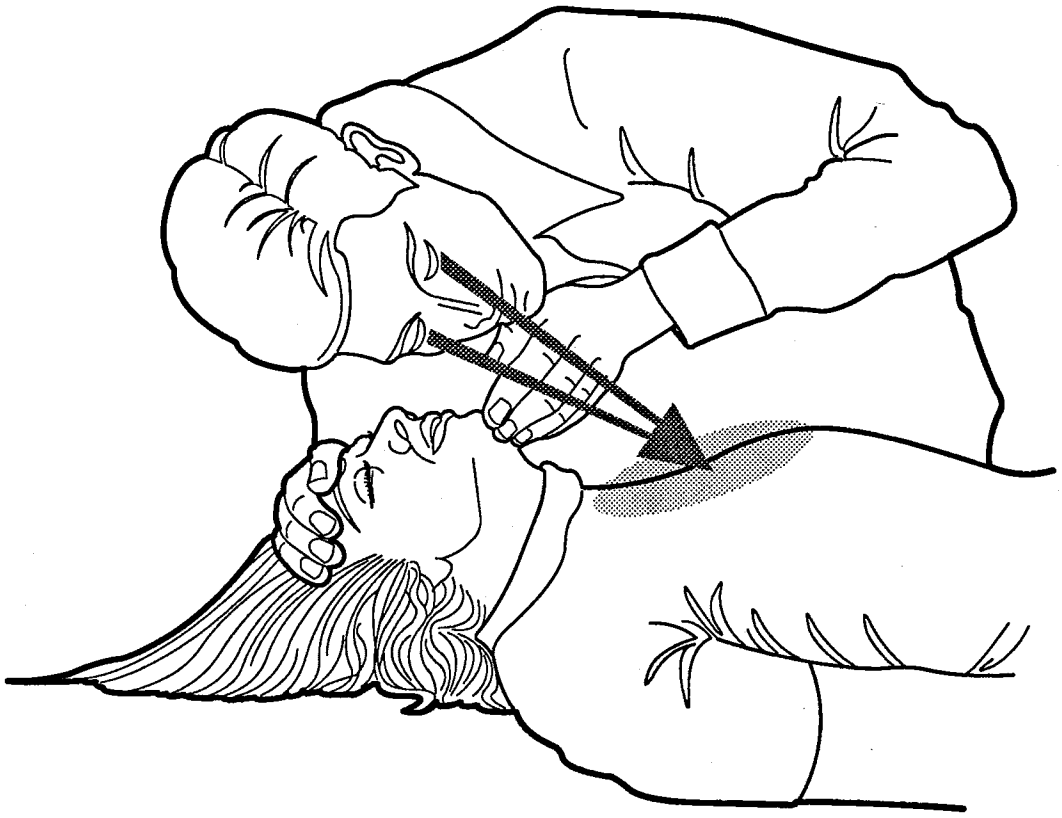
10. **True**, when it is necessary to control bleeding, you should use the following methods:

- Direct pressure with sterile bandage if available
- Elevation
- Pressure points
- Tourniquet if necessary (only as a last resort)

Breathing:

After opening the airway, determine whether the person is breathing

- Turn your head toward the victim's feet with your cheek close over the victim's mouth (3 to 5 seconds)
- Look for a rise and fall in the victim's chest
- Listen for air exchange at the mouth and nose
- Feel for the flow of air



Department of Labor Academies collaborate on employee training

The Department of Labor's Mine Safety and Health Administration (MSHA) operates a nationally recognized training facility and program at its Academy in Beckley, West Virginia. The MSHA Academy has been providing a wide range of technical training courses and a curriculum for supervisory development since its inception in 1971.

The Department of Labor (DOL) Academy was established by Secretary's Order in October 1987, as a working partner with all DOL agencies, to help management meet program and policy goals by focusing on employee development at all levels. The DOL Academy's goals apply to "common needs" training throughout the Department, that is training which cuts across occupational or agency lines. Supervisory and managerial functions are examples of "common needs" training, as well as microcomputer training and training for DOL top executives.

Each year the DOL Academy offers at least one session of each of the required supervisory development courses on site at the MSHA Academy for MSHA employees in the supervisory "pool program." Additional sessions, as well as other generic courses in the professional development curriculum, are offered on request. Program Directors from both Academies work closely together to provide maximum training opportunity without duplication of effort.

In 1991, the DOL Academy will introduce a Comprehensive Safety and Health course into its required supervisory development curriculum. This course will emphasize the supervisor's responsibility for safety and health in the workplace and the need for continuing education of employees on safety and health matters. The addition of this course will support the "Zero by 2000" initiative described by MSHA Assistant Secretary William J. Tattersall in the May-June issue of the bulletin. A major component of "Zero by 2000" is employee and supervisory training. The collaborative efforts of these two Department of Labor Academies will benefit this important initiative.

BULLETIN...

Safety materials available from North Carolina

The North Carolina Department of Labor's Mine and Quarry Division has released five additions to its series "Danger in and Around Mines." These colorful 8 1/2" x 14" handouts cover anaphylactic shock (sensitivity reaction), bee stings, spider bites, Rocky Mountain spotted fever and Lyme disease. Each sheet describes signs and symptoms and explains appropriate first aid measures. For additional information, contact the Division at 4 West Edenton St., Raleigh, NC 27601, or telephone (919) 733-7428.

This poster is based on a design by Bill Weitkemper,
Supervisor of Sewer Maintenance,
Public Works Department, City of Columbia, Missouri,
in association with the WPCA Collections Systems Committee

The Last Word...

"Honest criticism is hard to take, particularly from a relative, a friend, an acquaintance, or a stranger." *(Franklin P. Jones)*

"It wasn't raining when Noah built the ark." *(Howard Ruff)*

"Time is nature's way of keeping everything from happening at once." *(Unknown)*

"Forgive your enemies, but never forget their names." *(John F. Kennedy, 1917-1963)*

"History will be kind to me, for I intend to write it." *(Winston Churchill 1874-1965)*

"It takes a great deal of boldness mixed with a vast deal of caution, to acquire a great fortune; but then it takes ten times as much wit to keep it after you have got it as it took to make it." *(Mayer A. Rothschild)*

"Simplicity is an exact medium between too little and too much." *(Sir Joshua Reynolds)*

"If you wish to appear agreeable in society, you must consent to be taught many things which you know already." *(Johann Lavater, 1741-1801)*

"The ladder of life is full of splinters, but they always prick the hardest when we're sliding down." *(William L. Brownell)*

"Cooperation is not a sentiment—it is an economic necessity." *(Charles Steinmetz)*

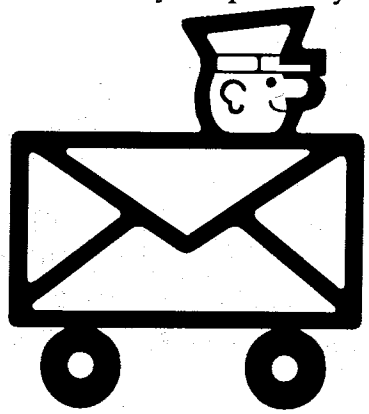
"The highest and most lofty trees have the most reason to dread the thunder." *(Charles Rollin)*

NOTICE: We will welcome any materials that you submit to the Holmes Safety Bulletin. We cannot guarantee that they will be published, but if they are, we will list the contributor(s). Please let us know what you would like to see more of, or less of in the Bulletin.

REMINDER: The District Council Safety Competition for 1990 is underway – please remember that if you are participating this year, you need to mail you quarterly report to:

Mine Safety & Health Administration
Educational Policy and Development
Holmes Safety Bulletin
4015 Wilson Boulevard, Room 531
Arlington, Virginia 22203-1984

Phone: (703) 235-1400



5000-22
(Rev. 12-78)

United States Department of Labor
MSHA
Mine Safety and Health Administration

Holmes Safety Association
Meeting Report Form

For the month of _____

TOTAL meetings this month _____

TOTAL attendance this month _____

NOTE: We must have your correct chapter number to give you credit for your HSA meetings

Chapter Number _____ (See address label, if incorrect, please indicate change)

(Signature) _____

(Telephone No.) _____

(Title) _____

1. Fill out 2. Fold and tape 3. Free mail in

NOTE: Be sure our address shows

If you do not care to receive this Bulletin, please check here ☐ and return this form.

Please include and change of address below:

MSHA, Office of Holmes Safety Association
Educational Policy & Development
4015 Wilson Boulevard
Arlington, Virginia 22203-1984

Special announcement:

The Winners of the 1990 National Metal and Nonmetal Mine Rescue Contest held in Las Vegas, Nevada, July 19, 1990. Congratulations!!!

Final Standings:

Company Name/Team/Address — *Final Standing*

Cominco American
Bixby, MO 1

Stillwater Mining Company
Hardrockers
Nye, MT 2

Mississippi Chemical Corporation
Mississippi Chemical Mine Rescue
Carlsbad, NM 3

Rhone-Poulenc of Wyoming Company
Rhone-Poulenc Blue
Green River, WY 4

The Doe Run Company
The Doe Run Company
Viburnum, MO 5

Dravo Lime Company
Raiders
Maysville, KY 6

Official Benchman Contest:

Company Name/Team/Benchman — *Standing*

Unocal Energy Mining Division
Blue
Stan Amrine 1

Stillwater Mining Company
Hardrockers
Gary Rickman 2

Rhone-Poulenc of Wyoming Company
Rhone-Poulenc Blue
Bruce Dryden 3

Stillwater Mining Company
Diggers
LeRoy Lanphear 4

Joseph A. Holmes Safety Association Awards Criteria—Outline

Type "A" Awards - For Acts of Heroism
The awards are medals with Medal of Honor Certificate.

Type "A" - For Acts of Heroic Assistance
The awards are Certificates of Honor.

Type B-1 Awards - For Individual Workers
(40 years continuous work experience without injury that resulted in lost workdays)
The awards are Certificate of Honor, Gold Pins and Gold Decal.

Type B-2 Awards - For Individual Officials
(For record of group working under their supervision)
The awards are Certificate of Honor.

Type C Awards - For Safety Records
(For all segments of the mineral extractive industries, meeting adopted criteria)
The awards are Certificate of Honor.

Other Awards - For Individual Workers
(For 10, 20, or 30 years without injury resulting in lost workdays)
The awards are 30 years - Silver Pin and Decal, 20 years - Bronze Pin and Decal, 10 years - Decal bearing insignia.

Special Awards - For Small Operators
(Mine operators with 25 employees or less with outstanding safety records)
The awards are Certificate of Honor.

For information contact: Secretary-Treasurer, Joseph A. Holmes Safety Association (304) 256-3245

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Department of Labor
MSHA, Holmes Safety Association
4800 Forbes Avenue
Pittsburgh, PA 15213

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